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Abstract

The present invention provides a special structure of magnetic elements, e.g. MRAM elements, as a security device for IC's containing magnetic memory cells. In an example embodiment, the structure may comprise a combination of two or more associated magnetic elements with pre-set anti-parallel magnetization directions. By determining the polarisation directions of the magnetic elements, exposure to an external magnetic field can be detected. Inverse polarisation directions indicate a normal situation, aligned polarisation directions indicate that the MRAM-array has been exposed to an external field. In this way it can be detected whether a user has tried to erase or alter the data stored in the MRAM in an illegal way. The IC can regularly check the resistance of the security system during operation. Upon detection of a field exposure, the IC can erase all MRAM data, reset itself or, block its functioning.